REMARKS

The present application is a US national application of PCT/IL98/00519. The present amendments, based on ***the claims as originally filed***, have been made to place the application in proper US form and to clarify the claims. ***Please ignore the claims attached to the IPER.*** The application contains claims 1, 2, 4-11 and 13-47. Claims 46 and 47 have been added and claims 3 and 12 have been canceled.

A marked-up version of the *new and amended* claims, based on the originally filed claims, is attached hereto.

An action on the merits is respectfully awaited.

Respectfully submitted,
S. BEN-YAAKOV

Paul Fenster

Paul FENSTER
Reg. No. 33,877

April 22, 2001

William H. Dippert, Esq.
c/o Cowan, Liebowitz and Latman, P.C.
1133 Avenue of the Americas
New York, NY 10036-6799

Tel: (212) 790-9200

Marked-up amended and new claims

1. (Amended) A micromotor comprising:

a piezoelectric element having~~including~~ a common electrode and a plurality of other electrodes, including at least a first and a second electrode group, formed thereon, and ~~including at least a first and a second electrode group~~, each group including at least one electrode~~, wherein the piezoelectric element causes motion in a first direction when a voltage is applied between the first electrode group and the common electrode and wherein the piezoelectric element causes motion in a second direction when a voltage is applied between the second electrode group and the common electrode~~;

~~an~~ voltage source that produces a time varying voltage between first and second terminals thereof, said first terminal being connected to~~electrifies~~ the common electrode and said second electrode being connected to a low voltage; ~~and~~

a switching arrangement having at least one first switch connected between said first group of electrodes and the second terminal of the power supply and a having at least one second switch connected between said second group of electrodes and the common electrode; and

a controller that selectively energizes the switches to selectively connect either the first or the second group of electrodes to the second terminal, said selective connection causing selective motion either a first direction or in an opposite second direction.

~~at least two switches separately connected between the first and second electrode groups and a low voltage, said switches being activatable to connect one of said first and second electrode groups to the low voltage to cause selective motion in the first or second directions~~.

4. (Amended) A micromotor according to claim 1~~any of the preceding claims~~ wherein the piezoelectric element comprises a rectangular piezoelectric plate having first and second faces wherein the common electrode is formed on the first face and the first and second groups of electrodes are formed on the second face.

6. (Amended) A micromotor according to claim 1~~any of the preceding claims~~ wherein the micromotor comprises a motive surface and wherein motion is induced in a surface of a

workpiece pressed against the motive surface when the piezoelectric element is electrified as aforesaid.

7. (Amended) A micromotor comprising:

an ultrasonically vibrating element; and

a drive circuit comprising:

an oscillating voltage source having a high voltage side connected to and electrifying at least one electrode of said ultrasonically vibrating element to cause a mechanical displacement of a portion thereof; and

a discrete switch arrangement attached to at least one additional electrode of said ultrasonically vibrating element to which said oscillating voltage is not connected which switch arrangement selects the direction of said displacement.

9. (Amended) A micromotor according to claim 7 ~~or claim 8~~, wherein:

the at least one additional electrode comprises a plurality of electrodes applied to a first face of said vibrating element; and

the at least one electrode comprises a common electrode applied to a second face of said element.

13. (Amended) A micromotor according to claim 1~~12~~ wherein said switches of said ~~disrete~~ switching arrangement are solid state switches.

14. (Amended) A micromotor according to claim ~~12 or~~ 13 wherein said switches of said ~~disrete~~ switching arrangement comprise transistorized switches.

15. (Amended) A micromotor according to claim 14 wherein said switches of said ~~disrete~~ switching arrangement are Mosfet transistors.

18. (Amended) A micromotor according to claim 16 ~~or claim 17~~ and including a pair of diodes, one of which is connected across each said Mosfet transistor.

20. (Amended) A micromotor according to claim 17~~any of claims 17-19~~ wherein, when the transistor is off, one end of the Mosfet is at a DC voltage equal to the peak of the

oscillating voltage and the oscillating voltage is impressed across the Mosfet transistor, such that the voltage across the transistor is substantially unipolar.

21. (Amended) A micromotor according to claim 1~~any of the preceding claims~~ wherein said source comprises an inverter.

33. (Amended) A micromotor according to claim 29~~any of claims 29-31~~ wherein the capacitance of said ultrasonic motor and the inductances of the series inductance and of said transformer match the electrical circuit to the mechanical resonance of said piezoelectric element.

36. (Amended) A micrometer according to claim 29~~any of claims 29-35~~ wherein said push-pull inverter includes a buck section for controlling the amplitude of the voltage connected to said primary of said transformer.

38. (Amended) A micromotor according to claim 29~~any of claims 29-37~~ wherein the second input is ground.

39. (Amended) A micromotor according to claim 29~~any of claims 29-38~~ wherein the first input is electrified with a DC voltage.

40. (Amended) A method of supplying switchable AC power to a micromotor~~load~~ comprising:

connecting a first terminal of an AC power source to one side of the micromotor~~load~~;

connected a drain of a Mosfet transistor to~~between~~ a second terminal of the AC power source ~~and the other side of the load~~;

connecting a source of the Mosfet transistor to the other side of the micromotor and

selectively supplying power to the load by applying a voltage between a gate of the Mosfet and the second AC terminal.

43. (Amended) A method according to claim 40~~any of claims 40-42~~ and including placing a capacitor in series with the load.

45. (Amended) A method according to claim 40~~any of claims 40-44~~ wherein, when the transistor is off, one end of the Mosfet is at a DC voltage equal to the peak voltage of the AC source and AC voltage of the AC source is impressed across the Mosfet transistor, such that the voltage across transistor is substantially unipolar.

46. (NEW) A micromotor according to claim 7 wherein fewer than four switches are provided for selectively controlling at least two directions of said displacement.

47. (NEW) A micrometer according to claim 46 wherein said fewer than four discrete switches are a single discrete switch per direction of displacement.